REMARKS

Claims 1, 6, and 7 are currently amended. Applicant respectfully submits that the amendments contained herein are fully supported by the Specification as originally filed and do not include new matter.

Claim Rejections Under 35 U.S.C. § 112

Claim 4 was rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant respectfully traverses. Applicant contends that claim 4 further specifies the properties of the second refractory metal material in that the second refractory metal material can serve as an impurity donor to the first refractory metal material if an anneal or other exposure to heat occurs. Therefore, claim 4 is definite, and Applicant respectfully requests withdrawal of the rejection and allowance of claim 4.

Claim Rejections Under 35 U.S.C. § 102

Claims 1-5 and 19 were rejected under 35 U.S.C. § 102(b) as being anticipated by Murphy (U.S. Patent No. 6,653,222). Applicant respectfully submits that Murphy qualifies as a reference under 35 U.S.C. § 102(e) rather than 35 U.S.C. § 102(b) in that the present application is a continuation of U.S. Patent Application Serial No. 09/858,617, filed May 16, 2001, and thus has a priority date of May 16, 2001, which is prior to the publication date (November 7, 2002) of Murphy. Applicant reserves the right to swear behind Murphy. Applicant respectfully traverses the rejection.

Claim 1, as currently amended, recites a first refractory metal material overlying and adjoining the silicon-containing material, where the first refractory metal material is a conductive material containing a first refractory metal and a first impurity capable of forming a chemical bond with the first refractory metal; and a second refractory metal material overlying the first refractory metal material, where the second refractory metal material is a conductive material containing a second refractory metal and a second impurity capable of forming a chemical bond with the second refractory metal and where the second refractory metal material has a lower affinity for the first and second impurities than does the first refractory metal material.

Applicant contends that Murphy does not include a second refractory metal material overlying a first refractory metal that contains a first impurity material and that is adjoining a

silicon-containing material, where the second refractory metal has a lower affinity for the first impurity than does the first refractory metal material. This means that there is a net migration of the first impurity out of the second refractory material and into the first refractory metal during an anneal or other such exposure to heat the first impurity. Murphy (Figure 2) includes a liner 13 having a barrier layer 20 (column 5, line 28) overlying a lower portion 22 (column 6, lines 14-15) of liner 13 that is in contact with a silicide layer 10 (column 5, lines 42-43). As indicated in column 6, lines 3-15, during an anneal, the silicide will consume the liner 13 faster than the liner 13 will react with ambient reactive element. Passivating agent atoms within the barrier layer 20 react with the liner, reducing amount of liner 13 available to react with the underlying material layers. Therefore, silicides and other impurities are limited to the lower portion 22 of liner 13. This suggests that the impurities migrate upward and are limited to the lower portion 22 because there is not enough of the overlying liner available to react with them and not because of barrier layer 20 having a different affinity for the impurities than the lower portion 22. Therefore, Murphy does not include each and every recitation of claim 1, so claim 1 should be allowed.

Claims 2-5 depend from claim 1 and are thus allowable for at least the same reason as claim 1. Therefore, claims 2-5 should be allowed.

Claim 19 recites a titanium nitride layer overlying the silicon-containing material, where the titanium nitride layer is formed by reactive sputtering from a titanium target in a nitrogen-containing ambient to produce an unsaturated titanium nitride material having a bulk resistivity within 15% of a maximum unsaturated bulk resistivity. Applicant found no indication of an unsaturated titanium nitride material having a bulk resistivity within 15% of a maximum unsaturated bulk resistivity in Murphy. Therefore, Murphy does not include each and every recitation of claim 19, so claim 19 should be allowed.

Allowable Subject Matter

Claims 6, 7, and 20-21 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims. Applicant has amended claims 6 and 7, as suggested by the Examiner. Applicant thus respectfully requests allowance of claims 6 and 7.

Applicant has not rewritten claims 20 and 21. Claim 19 is patentable over Murphy. Claims 20 and 21 depend from claim 19 and are thus allowable for at least the same reason as claim 19. Therefore, claims 20 and 21 should be allowed.

Applicant acknowledges that claims 8-18 and 22-35 were allowed.

CONCLUSION

In view of the above remarks, Applicant believes that the claims are in condition for allowance and respectfully requests a Notice of Allowance be issued in this case. If the Examiner has any questions regarding this application, please contact the undersigned at (612) 312-2208.

Respectfully submitted,

Date: 09-14-05

Tod A. Myrum
Reg. No. 42,922

Attorneys for Applicant
Leffert Jay & Polglaze
P.O. Box 581009
Minneapolis, MN 55458-1009
T 612 312-2200
F 612 312-2250